<div align="center">**REMARKS**</div>

Claims 1, 5 through 8, 11 and 15 through 18 remain in this application. Claims 1, 8, 11 and 18 are amended. Claims 21 and 22 are added.

Claim Rejections under 35 U.S.C. §112

The Office Action objected to claims 1 and 11 for antecedent basis for the phrase, "the memory address file." This typographical error has been corrected.

Claim Rejections under 35 U.S.C. §102

Claims 1-20 were rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Publication No. 20050259597 to Benedetto et al. (the Benedetto reference). A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference. The identical invention must be shown in as complete detail as contained in the claim. See M.P.E.P. 2131. Applicants respectfully traverse this rejection of the claims because the Office Action has failed to prove that the Benedetto reference discloses each element of the claims.

Independent Claim 1 and dependent claims 5 through 7, 21 and 22

The Office Action has failed to prove that the Benedetto reference discloses the elements of claim 1, *inter alia*, of, "in response to receiving a TCN, monitoring end host addresses in data units received from the customer network for a predetermined time period; flushing an address memory file associating end host addresses with ports of the provider edge bridge in response to detecting an end host address indicating that a topology change has occurred in one or more of the customer LAN segments affecting paths of data units through the provider network, wherein detecting an end host address indicating that a topology change has occurred comprises detecting a predetermined number of end host addresses of data units received in the predetermined time period is not found in the address memory file; and in response to determining a topology change in one or more of the customer LAN segments do not affect paths of data units through the provider network, storing a new address in the address memory file without flushing the address

memory file." The specification of corresponding US Published Application No. 20040174828 states in paragraphs 11 and 12 that:

> "[0011] Topology changes in the Customer VLAN can also require changes in the MAC address tables in the bridges of the provider network. A previous proposal allows snooping on all TCNs generated within the customer domain, and taking action indiscriminately. Each time a TCN is generated, the provider domain unlearns (flushes the MAC table of each bridge) and re-learns all the addresses. Re-learning the MAC address at each bridge is a costly and time-consuming operation.

> [0012] Therefore, a need has arisen for an efficient method of taking action inside the provider domain responsive to TCNs received from the customer domain.

The specification of corresponding US Published Application No. 20040174828 states in paragraphs 33 through 37 that:

> [0033] FIG. 1b illustrates a topology change that will affect the MAC address tables of the bridges in Site A, but does not affect the MAC address table in any of the provider bridges. In FIG. 1b, the CB2-CB3 link is activated and the CE1-CB1 link is blocked. TCNs will be generated accordingly within the Customer VLAN 18 to indicate that changes have been made to the topology. TCNs are generated as a BPDU (Bridge Protocol Data Unit); if the TCN flag is set in a BDPU, it is interpreted as a TCN. The MAC address tables for CE1 and CB2 must be changed in response to these TCNs, but the forwarding address in the provider bridges remain valid with regard to addresses X and Y. Therefore, unlearning address in the provider domain due these TCNs would be wasteful.

> . . .

> [0037] The flowchart of FIG. 2a determines whether a TCN was generated for a topology change in the **customer domain** that may require unlearning/relearning operations in the **provider domain**, by checking for contradictory MAC address or new MAC addresses. However, receiving a new MAC address does not conclusively mean that the new address was received due to the topology change

indicated by the received TCN. A new MAC address could also indicate that a MAC address was not previously active. Thus, an unlearning operation could be unnecessary."

The specification describes that in known solutions, each time a TCN is generated from a customer domain, a provider domain unlearns (flushes the MAC table of each bridge) and re-learns all the addresses. However, re-learning the MAC address at each bridge is a costly and time-consuming operation. An embodiment of the specification describes that a TCN generated from a customer domain may not require flushing of the MAC addresses in the provider domain when the topology change in the customer domain does not affect paths of data units through the provider domain. Thus, an embodiment determines whether the MAC addresses need to be flushed and relearned in a provider domain in response to a TCN from a customer domain. If the topology change in the customer domain does not affect paths of data units through the provider domain, then the MAC addresses in the address memory file are not flushed and relearned.

The Office Action cites Figure 2 and paragraphs 19, 92 and 113 of the Benedetto reference for disclosing these elements of the claims. The Benedetto reference states in paragraph 17 that:

If a bridge *stops receiving BPDU messages on a given port* (indicating a possible link or device failure), it will continue to increment the respective message age value until it reaches the maximum age threshold. The bridge will then discard the stored BPDU information and proceed to re-calculate the root, root path cost and root port by transmitting BPDU messages utilizing the next best information it has. The maximum age value used within the bridged network is typically set by the root, which enters the appropriate value in the maximum age field 126 of its transmitted BPDU messages 100. Neighboring bridges similarly load this value in their BPDU messages, thereby propagating the selected value throughout the network. The default maximum age value under the IEEE standard is twenty seconds. [emphasis added]

The Benedetto reference clearly indicates in this paragraph 17 that *a bridge will discard stored BPDU information if a bridge stops receiving BPDU messages on a given port for a maximum*

age value threshold. In paragraph 19, the Benedetto reference reiterates this disclosure and states that:

> To prevent bridges from distributing messages based upon incorrect address information, bridges quickly age-out and discard the "old" information in their filtering databases. More specifically, upon detection of a change in the active topology, a bridge begins transmitting Topology Change Notification Protocol Data Unit (TCN-PDU) messages on its root port. The format of the TCN-PDU message is well known (see IEEE 802.1D standard) and, thus, will not be described herein. A bridge receiving a TCN-PDU message sends a TCN-PDU of its own from its root port and sets the TCA flag 112 in BPDUs that it sends on the port from which the TCN-PDU was received, thereby acknowledging receipt of the TCN-PDU. By having each bridge send TCN-PDUs from its root port, the TCN-PDU is effectively propagated hop-by-hop from the original bridge up to the root. The root confirms receipt of the TCN-PDU by setting the TC flag 114 in the BPDUs that it subsequently transmits for a period of time. Other bridges, receiving these BPDUs, note that the TC flag 114 has been set, thereby alerting them to the change in the active topology. In response, bridges significantly reduce the aging time associated with their filtering databases which, as described above, contain destination information corresponding to the entities within the network. Specifically, bridges replace the default aging time of five minutes with the forwarding delay time, which by default is fifteen seconds. Information contained in the filtering databases is thus quickly discarded.

Thus, in response to a TCN-PDU, the Benedetto reference discloses that information contained in the filtering databases is thus quickly discarded. There is no discussion of determining whether the MAC addresses need to be flushed and relearned in a provider domain in response to a TCN from a customer domain. There is no discussion that when the topology change in the customer domain does not affect paths of data units through the provider domain, then the MAC addresses in the address memory file are not flushed and relearned. As such, the Benedetto reference fails to describe, inter alia, the requirements of claim 1 of, "and in response to

determining a topology change in one or more of the customer LAN segments do not affect paths of data units through the provider network, storing a new address in the address memory file without flushing the address memory file."

In conclusion, the Benedetto reference fails to disclose each element of the independent claim 1 and thus fails to anticipate claim 1 under 35 U.S.C. 102(e). Claims 5 through 7, 21 and 22 add further patentable matter to Claim 1 and thus are further differentiated and patentable under 35 U.S.C. §102 over the Benedetto reference.

Independent Claim 8

The Office Action has failed to prove that the Benedetto reference discloses the elements of claim 8, *inter alia*, of, "determining whether a topology change in the customer LAN segment affects paths of data units through the provider network; when a topology change does not affect paths of data units through the provider network, transmitting unflagged topology change notifications (TCNs); when a topology change affects paths of data units through the provider network, transmitting flagged topology change notifications (TCNs) which relate to the topology changes affecting paths of data units through the provider network."

The Office Action cites Figure 2 and paragraphs 19 and 108 of the Benedetto reference for disclosing these elements of the claims. The Benedetto reference states in paragraph 19 that:

> [0019] As ports transition between the blocked and forwarding states, entities may appear to move from one port to another. To prevent bridges from distributing messages based upon incorrect address information, bridges quickly age-out and discard the "old" information in their filtering databases. More specifically, upon detection of a change in the active topology, a bridge begins transmitting Topology Change Notification Protocol Data Unit (TCN-PDU) messages on its root port. The format of the TCN-PDU message is well known (see IEEE 802.1D standard) and, thus, will not be described herein. A bridge receiving a TCN-PDU message sends a TCN-PDU of its own from its root port and sets the TCA flag 112 in BPDUs that it sends on the port from which the TCN-PDU was received, thereby acknowledging receipt of the TCN-PDU. By having each bridge send TCN-PDUs from its root port, the TCN-PDU is effectively propagated hop-by-

hop from the original bridge up to the root. The root confirms receipt of the TCN-PDU by setting the TC flag 114 in the BPDUs that it subsequently transmits for a period of time. Other bridges, receiving these BPDUs, note that the TC flag 114 has been set, thereby alerting them to the change in the active topology. In response, bridges significantly reduce the aging time associated with their filtering databases which, as described above, contain destination information corresponding to the entities within the network. Specifically, bridges replace the default aging time of five minutes with the forwarding delay time, which by default is fifteen seconds. Information contained in the filtering databases is thus quickly discarded.

The Benedetto reference only describes that upon detection of a change in the active topology, a bridge begins transmitting Topology Change Notification Protocol Data Unit (TCN-PDU) messages on its root port. There is no description of determining whether a topology change in a customer LAN segment affects paths of data units through the provider network.

Furthermore, the Benedetto reference describes that a TCA flag 112 in BPDUs is set thereby acknowledging receipt of the TCN-PDU. In general, a bridge acknowledges the reception of a TCN BPDU by setting the TCA flag in its next configuration BPDU. The Benedetto reference nowhere describes not setting the TCA flag or determining whether to set the flag depending on whether a topology change in the customer LAN segment affects paths of data units through the provider network.

In conclusion, the Benedetto reference fails to disclose each element of the independent claim 8 and thus fails to anticipate claim 8 under 35 U.S.C. 102(e).

Independent Claim 11 and dependent claims 15 through 17

For similar reasons as stated with respect to claims 1 and 8, the Office Action has failed to prove that the Benedetto reference discloses the elements of claim 11. Claims 15 through 17 add further patentable matter to Claim 11 and thus are further differentiated and patentable under 35 U.S.C. §102 over the Benedetto reference.

Independent Claim 18 and dependent claims 19 and 20

For similar reasons as stated with respect to claims 1 and 8, the Office Action has failed to prove that the Benedetto reference discloses the elements of claim 18.

CONCLUSION

For the above reasons, the foregoing amendment places the Application in condition for allowance. Therefore, it is respectfully requested that the rejection of the claims be withdrawn and full allowance granted. Should the Examiner have any further comments or suggestions, please contact Jessica Smith at (972) 240-5324.

Respectfully submitted,

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